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- Addition of hydrogen chloride to butylenes in the gas phase on an aluminosilicate catalyst. B. A. Krentsel and N. A. Pokotilo (Petrokum Inst., Acad. Sci. U.S.S.R.). *Zhur. Priklad. Khim.* (J. Applied Chem.) 23, 864-8 (1950).
 C_4H_8 (88% normal, 12% iso) passed over a natural ascanite catalyst, in a 1.0:1.1 mixt. by vol. with HCl (excess HCl) at 100-5°, at the space velocities 23.2, 34.0, 58.6, 69.0, 80.4, 124.0, 144.0 l./l. catalyst/hr., gave C_4H_9Cl yields (with respect to C_4H_8) of 41.0, 56.5, 62.7, 79.5 (max.), 64.5, 48.9, 33.5%. At const. space velocity, at 82, 103.5, and 152°, the yields were 62.7, 79.5 (max.), 58.7%. The yield decreases with increasing iso- C_4H_8 in the gas; thus, at 100-5°, with iso- C_4H_8 12.8, 30.0, 56.0, 63.5%, the yields were 79.5, 58.4, 43.0, 19.2%. With up to 12% iso- C_4H_8 , the product consists almost entirely of *sec*-BuCl, with only traces of *tert*-BuCl. The max. productivity of the catalyst is 118 g. C_4H_9Cl /hr./l. catalyst. N. Thon

POKOTILO, N. A.

The addition of hydrogen chloride to butenes in the gas phase over aluminosilicate catalyst. B.A. Krentsel and N.A. Pokotilo. J. Applied Chem. U.S.S.R. 23, 913-17 (1950) (Engl. translation).

Sso C.A. 45, 1496g.

R.M.S.

immediate source clipping

CA

Thermal chlorination of normal butane. B. A. Krentsel and N. A. Pokotilo. *Zhur. Priklad. Khim.* (J. Applied Chem.) **24**, 727-32 (1951).—Butane is chlorinated with 100% efficiency (based on Cl) at 300°; while an inert reaction tube filler lowers the initiation temp. it does not lower the temp. needed for complete Cl utilization. At space velocity 32-500 with 4.5 molar excess of butane the products are substantially mono-Cl derivs., but a smaller excess of hydrocarbon gives at most 80% monochlorides. The higher-boiling products, contg. di-Cl derivs., were not studied. The mono-Cl derivs. consist of BuCl and EtCHClMe in 1:1.64 ratio. Catalysts like activated C, as such or satd. with CuCl₂, give nearly 100% di-Cl derivs. Under the same conditions propane is chlorinated to PrCl and iso-PrCl in good conversions. G. M. Kosolapoff

SSR/Chemistry - Petroleum 1 Jul 52

The Thermal Stability of Butyl Chlorides," B. A. Grentsel', N. A. Pokotilo, Petroleum Inst, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXXV, No 1, pp 103-105

Studied the thermal stability of 1-chlorobutane, 2-chlorobutane, isobutyl chloride, and isomyl chloride. Found that while contact with an inert surface increases rate decomn, the catalyst ascertains greatly increases decomn. The absence of chlorine in the end products and the presence of HCl indicates that the olefin consists of the removal of HCl, leaving an olefin. The position of the chlorine atom in the mol has

a greater effect on its thermal stability than the structure. Presented by Acad A. V. Topchil'ev 5 May 52.

POKOTILO, N.A.

224714

POKOZIY, I.T., kand.sel'skokhozyaystvennykh nauk (Khar'kov)

Damage of scarabaeids in shelterbelts. Zashch.rast.ot vred. i bol.
3 no.2:61-62 Mr-Apr '58. (MIRA 11:4)
(Forest insects)

KRENTSEI, B.A.; POKOTILO, N.A.

Thermal stability of butyl chlorides. Doklady Akad. Nauk S.S.S.R. 85,
103-5 '52. (MLRA 5:8)
(CA 47 no.15:7431 '53)

IVANOV, V.D., dots.; POKOTILO, V.P., dots.; KONOPLEV, P.S., st.
prepod.; AKSENOV, A.A., assis.; KLYKOV, K.S., assis.;
MART'YANOVA, L.I., tekhn. red.

[Reference book on sawing lumber materials] Posobie po ra-
skroiu pilovochnogo syr'ia. Arkhangel'sk, Arkhangel'skoe
knizhnoe izd-vo, 1962. 104 p. (MIRA 16:4)

1. Nauchno-tekhnicheskoye obshchestvo lesnoy promyshlen-
nosti. Arkhangel'skoye oblastnoye pravleniye. 2. Kafedra le-
sopil'no-strogal'nykh proizvodstv Arkhangel'skogo lesotekhn-
cheskogo instituta (for all except Mart'yanova).
(Hardboard)

POKOTILO, Ye.D., kandidat meditsinskikh nauk (Kiyev)

Fibrous osteodystrophy of the jaws. Probl. stom. 3:317-320
'56 (MLBA 10:5)

(JAWS--DISEASES)

BELITSER, V.A., prof. (Kiyev); FETISOV, N.V., prof. (Kiyev); DEMIN, V.I.,
kand.biol.nauk (Kiyev); POKOTILO, Ye.D., kand.med.nauk (Kiyev)

Significance of the complex of B vitamins in the treatment of
paradentosis. Probl.stom. 4:237-240 '58. (MIRA 13:6)
(VITAMINS--B, ETC.--THERAPEUTIC USE)
(GUMS--DISEASES)

POKOTILO, Ye.D.

Treatment of chronic odontogenic highmoritis. Probl. stom. 5:248-253
'60. (MIRA 15:2)

1. Kiyevskiy meditsinskiy institut.
(ANTRUM__SURGERY)

POKOTILO, Ye.D.

Clinical aspects of chronic odontogenic highmoritis. Probl. stom.
5:254-259 '60. (MIRA 15:2)

1. Kiyevskiy meditsinskiy institut.
(ANTRUM DISEASES)

DOBROKHOTOV, N.N., akademik [deceased]; GREBEN', K.A.; KONYUKH,
V.Ya.; ~~POKOTILO, Ya.P.~~; KOBEZA, I.I.; GOL'DENBERG, I.B.;
PROKHORENKO, K.K.; ISHCHUK, N.Ya.; KHAN, B.Kh.;

[Steel production in open-hearth furnaces] Martenovskoe pro-
izvodstvo stali. Moskva, Izd-vo "Metallurgiya," 1964. 239 p.
(MIRA 17:6)

1. Akademiya nauk Ukr.SSR (for DobrokhotoV).

POKOTILO, Ye.P.; KHIL'KO, M.M.

Redesign of open-hearth furnaces. Vop. proizvod. stali no.9:
46-50 '63. (MIRA 16:9)

KOBEZA, I.I.; KARP, S.F.; POKOTILO, Ye.P.

Testing the self-carburat~~ion~~ of natural gas in open-hearth
furnace ports. Izv.vys.ucheb.zav.; chern.met. 5 no.4:153-159
'62. (MIRA 15:5)

1. Institut chernoy metallurgii AN USSR i Institut ispol'zovaniya
gaza AN USSR.

(Open-hearth furnaces) (Gas, Natural)

GREBEN', K.A.; POKOTILO, Ye.P.

Redesign of 400 and 550-ton open-hearth furnaces for firing them
with cold high-calorie gas. Vop.proizv.stali no.8:10-17 '61.

(MIRA 14:6)

(Open-hearth furnaces--Design and construction)
(Gas as fuel)

POKOTILO, Ye.P.; SHKLYAR, M.S.

Operation of a remodeled 400-ton open-hearth furnace fired by high-calorie gas. Met. i gornorud. prom. no.5:15-18 S-0 '64. (MIRA 18:7)

1. Institut ispol'zovaniya gaza AN UkrSSR (for Pokotilo).

POKOTILOV, K.YE.

DECEASED

1961/3

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MEDICINE

DALIN, M.A.; PIS'MAN, I.I.; BAKHSI-ZADE, A.A.; BUNYAT-ZADE, A.A.;
POKOTILOVA, S.D.

Copolymerization of ethylene with α -olefins on a chromium
oxide catalyst. Azerb.khim.zhur. no.2:9-16 '61. (MIRA 14:8)
(Ethylene) (Olefins) (Polymerization)

STULIY, L.A.; SAFRONOVA, O.N.; BUTS'KA, L.K., kand. med. nauk; KRIVOBOKOV, S.A. [Kryvobokov]; VOLOSHINOV, B.M. [Voloshynov, B.M.], dotsent BICHKOVSKIY, V.N. [Byshkovs'kyi, V.N.] dotsent; POKOTILOVA, V.Yu. [Pokotylova, V. IU]; KOLESNIKOV, G.F. [Kolesnykov, H.F.]; ZLATKIS, L.S.; SAVOST'YANOVA, S.I.; BRIN, D.D. [Bryn, D.D.]; MATVEYENKO, Ye.A. [Matviienko, IE.A.]; BRONZ, L.M.; YEPSHTEYN, L.G. [Epshtein, L.H.], kand. med. nauk; SHAKHNOVICH, L.A. [Shakhnovych, L.A.]

Annotations and authors' abstracts. Pediat. akush. ginek. no.3:
31-34 '63 (MIRA 17:1)

1. Khar'kovskiy nauchno-issledovatel'skiy institut okhrany materinstva i detstva (for Stuliy). 2. Kafedra detskikh bolezney Odesskogo meditsinskogo instituta (for Safronova). 3. Ukrainskiy institut okhrany materinstva i detstva (for Buts'ka). 4. Detskiy sanatoriy dlya rekonvalescentov ot tuberkuleznogo meningita, Kiyev, Pushcha-Voditsa (for Krivobokov). 5. Detskaya klinika Ivano-Frankovskogo meditsinskogo instituta (for Voloshinov). 6. Kafedra detskikh infektsionnykh bolezney Krymskogo meditsinskogo instituta (for Bichkovskiy, Pokotilova). 7. Institut infektsionnykh bolezney Kiyev (for Kolesnikov). 8. Khar'kovskiy oblastnoy detskiy dom No.1 (for Zlatkis, Savost'yanova, Brin, Matveyenko). 9. Kafedra pediatrii Kiyevskogo meditsinskogo instituta (for Bronz) 10. Kafedra fakul'tetskoy pediatrii Gor'kovskogo med. instituta (for Yepshteyn). 11. 2-ya detskaya bol'nitsa Shevchenkovoyskogo rayona g. Kiyeva (for Shakhnovich).

KHVILIVITSKAYA, M.I.; KHIN, L.Yu.; POKOTINSKAYA, L.A.

Prognosis in myocardial infarction; late observations. Terap.arkh.
27 no.2:3-15 '55. (MLRA 8:7)

1. Iz kardiologicheskogo sanatoriya VTSSPS v Leningrade (glavnyy
vrach B.N.Vvedenskiy).

(MYOCARDIAL INFARCT,
progn.)

1. POKOTINSKIY, I.S., KRIVISKIY, A.S., LUZIANINA, T.YA.,
2. USSR (600)
7. "A New Method for Studying the Development of Microbes and Bacterial Viruses in the Electron_Microscope", Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 5, 1951 [sic], pp 19-22.

9. Mikrobiologiya, Vol XXI, Issue 1, Moscow, Jan-Feb 1952, pp 121-132. Unclassified.

POKOTINSKIY, I.S.

POKOTINSKIY, I.S.; LUZYANINA, T.Ya.

Electron microscopy of influenza virus adsorbed on erythrocytes.
Trudy, AMN SSSR 28:14-20 '53. (MLRA 7:8)

1. Iz Otdela virusologii Instituta eksperimental'noy meditsiny
AMN SSSR.

(INFLUENZA VIRUSES,
microscopy, electron)
(MICROSCOPY, ELECTRON,
of influenza virus)

POKOTINSKIY, I.S.; SOKOLOVA, N.M.; STREMILOVA, A.Ye.

Electron microscopic studies on the morphological structure of
Mycobacterium tuberculosis. Probl.tub. 38 no.4:94-99 '60.
(MIRA 14:5)

(MYCOBACTERIUM TUBERCULOSIS)

POKOTINSKIY, I.S.

General purpose apparatus for preparing specimens for the electron microscope. Lab delo 7 no. 3:46-48 Mr '61. (MIRA 14:3)

1. Laboratoriya elektronnoy mikroskopii (zav. I.S. Pokotinskiy)
i laboratoriya eksperimental'noy onkologii (zav. - chlen-
korrespondent AMN SSSR prof. L.M. Shabad) Instituta onkologii
AMN SSSR, Leningrad.

(ELECTRON MICROSCOPY)

(BIOLOGICAL LABORATORIES—EQUIPMENT AND SUPPLIES)

POKOTINSKIY, I.S.; FEL'DMAN, R.R.

Compound therapy for metastasis of cancer of the breast. Trudy LPMI
31 no.2:136-138 '63. (MIRA 17:10)

1. Iz rentgenologicheskogo otdeleniya Ob'yedinennoy bol'nitsy imeni
Kuybysheva, Leningrad i kafedry fakul'tetskoy terapii Leningradskogo
pediatricheskogo meditsinskogo instituta.

POKOTINSKIY, I.S.

Accelerated method for the detection of Mycobacterium tuberculosis and other bacteria. Probl.tub. 39 no.1:96-97 '61.

(MIRA 14:1)

1. Iz Instituta onkologii (dir. - deystvitel'nyy chlen AMN SSSR prof. A.I. Serebrov) AMN SSSR.

(MYCOBACTERIUM TUBERCULOSIS)

LYCHKIN, V.M.; GRAFSKIY, N.I.; POKOYEVA, P.S.; RAZVIN, V.M.

Proposals of the efficiency promoters of the Saratov Oils and
Fats Combine. Masl.-zhir. prom. 29 no.8:30 Ag '63.
(MIRA 16:10)

POKOZIY, I. T.

"Pests of the Young Oak Forest Belts of the Eastern Part of Khar'kovskaya Oblast."
Cand Agr Sci, Khar'kov Agricultural Inst, Khar'kov, 1953. (RZhBiol, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational
Institutions (13)

SO: Sum. No. 598, 29 Jul 55

POKOZIY I. T.
USSR/General and Specialized Zoology - Insects.

P.

Abs Jour : Ref Zhur - Biol., No 8, 1958, 35312

Author : Pokoziy, I.T.

Inst : -

Title : A Dangerous Pest of the Oak Tree.

Orig Pub : Lesn. kh-vo, 1957, No 1, 72.

Abstract : The lethruss apterus beetles in Kharkov oblast damaged almost all kinds of forest strips, especially the oak. In experiments compact dusting of the soil with a HCCH dust (10, 16 and 24 kg/hectare) secured the total destruction of the beetles.

Card 1/1

USSR/General and Specialized Zoology - Insects.

P.

Abs Jour : Ref Zhur - Biol., No 8, 1958, 35313

Author : Pokoziy, I.T.

Inst : The Kharkov Agricultural Institute.

Title : The Effect of the Damage Caused by the Lethrus Beetle
on the Growth of the Oak.

Orig Pub : Zap. Khar'kovsk. s.-k. in-ta, 1957, 13 (50), 197-198.

Abstract : No abstract.

Card 1/1

- 22 -

USSR/General and Special Zoology. Insects

P

Abs Jour : Ref Zhur - Biol., No 6, 1958, No 25794

Author : ~~Pokoziy I.T.~~

Inst : Khar'kov Agricultural Institute

Title : The Use of Hexachlorene in the Control of Soil Pests in
Forest Strips. (Primeneniye hexakhlorana v bor'-bo s pochven-
nymi vreditelyami lesnykh polos.)

Orig Pub : Zep. Khar'kovsk. s.-kh. in-ta, 1957, 13, (50), 199-203

Abstract : No abstract

Card : 1/1

POKOZIY, N.I.

Effect of certain antibiotics on antibody formation and on
complement fixation activity of the blood. Antibiotiki 4
no.4:85-87 J1-Ag '59. (MIRA 12:11)

1. Kafedra mikrobiologii Stalinskogo meditsinskogo instituta.
(ANTIBIOTICS pharmacol)
(COMPLEMENT)
(ANTIBODIES)

YUGOSLAVIA

POKRAJAC, Dr Niska, Faculty of Medicine (Medicinski Fakultet), Zagreb.

"Metabolic Influences on Tolerance Toward Large Doses of Insulin."

Zagreb, Lijecknicki Vjesnik, Vol 85, No 8, 1963, pp 886-888.

Abstract: The authoress experimented with rats to determine the effect of large doses of insulin on rats and found that the main factor in tolerance is immediate and prolonged access to food after insulin injections. Both normal rats and those which had been subjected to adrenalectomy or large doses of cortisole survived large doses of insulin if food was available as needed. The overall amount of food consumed per day did not increase, but the rhythm of consumption changed. The rat does not appear to represent an exception so far as the role of insulin in the regulation of the metabolism of carbohydrates is concerned.

No references.

1/1

YUGOSLAVIA

Dr Dzelaludin TESKEREDZIC and Dr Mihajlo POKRAJIC, Department of
Otorhinolaryngology, Military Hospital (Otorinolaringoloski odjel
Vojne bolnice) Sarajevo.

"Isolated Tuberculosis of the Epipharynx."

Zagreb, Liječnički Vjesnik, Vol 84, No 11, 1962: pp 1141-1143.

Abstract [English summary modified]: Case in woman aged 23, diagnosed
in adenotomy operative specimen and then ascribed to apparently healed
apical pulmonary focus dissemination. Uneventful recovery; prolonged
streptomycin and isoniazid therapy. Slide, 3 Yugoslav and 6 Western
references.

1/1

TESKEREDZIC, Dzelaludin, dr.; POKRAJCIC, Mihajlo, dr.

Isolated tuberculosis of the epipharynx. Liječn. vjesn. 84 no.11:1141-1143 '62.

1. Iz Otorinolaringoloskog odjela Vojne bolnice u Sarajevu.
(TUBERCULOSIS) .(NASOPHARYNX)

POKRAJIC, Mihailo, d-r.

No translation. Med. arh., Sarajevo 11 no.3:79-86 May-June 1957.

1. Otolaringoloska klinika Medicinskog fakulteta u Sarajevu.

Sef; prof. d-r Z. Prastalo.

(VEINS, CRANIAL SINUSES, dis.

thrombophlebitis of sigmoid sinus (Ser))

(THROMBOPHLEBITIS,

sigmoid sinus (ser))

POKRAJCIC, Mihailo, d-r

Contribution to the knowledge of the appearance of pneumatocele of the frontal sinuses. Med.arh., Sarajevo 14 no.3:77-81 My-Je '60.

1. Usno odjeljenje Vojne bolnice u Sarajevu (Sef: d-r Delaludin Teskeredzic)
(FRONTAL SINUSES dis)

TESKEREDZIC, Dzelaludin, dr.; POKRAJCIC, Mihailo, dr.

Contribution to the sterile cerebral abscesses of rhinogenic origin.
Med. arh. 16 no.2:45-52 '62.

1. Usno odeljenje Vojne bolnice u Sarajevu (Sef: dr Dzelaludin
Teskeredzic)

(BRAIN ABSCESS etiol) (EAR dis)

S

LUTOMSKA, Ksenia, prof. dr. med.; KONINSKA, Danuta; POKRANT, Halina.

Prevention of dental caries with topical fluorides. Pol. tyg.
lek. 19 no.48:1850-1852 30 N'64.

1. Z Zakladu Stomatologii Zachowawczej Akademii Medycznej w
Gdansku (kierownik: prof. dr. med. K. Lutomska).

TARTAKOVSKIY, L.B.; POKRAS, A.M.

Theory of the periscopic antenna system. Radiotekh. i elektron. 1
no.2:186-196 F '56. (MLRA 9:7)

(Radio--Antennas)

AUTHOR : Pokras, A.M. and Gertsenshteyn, M.E.

"Wave Guide Splitter with Variable Coupling,"
A-U Sci Conf dedicated to "Radio Day," Moscow, 20-25 May 1957.

PERIODICAL: Radiotekhnika i Elektronika, Vol. 2, No. 9, pp. 1221-1224,
1957, (USSR)

POKRAS, A.M.

108-7-5/13

AUTHOR
TITLE

KIMBER B.Ye., POKRAS A.M.,
On the Formation of Problems in the Theory of Periscope Aerials.
(O postanovke zadach v teorii periskopicheskoy antennoy - Russian)
Radiotekhnika, 1957, Vol 12, Nr 7, pp 30 - 40 (U.S.S.R.)

PERIODICAL

ABSTRACT

The method applied for the solution of the direct problem is analysed and initial inverse problems are raised for the calculation of a periscope aerial in agreement with the physical characteristics and general properties of the system. In the majority of cases of an investigation of the periscope system calculation of the field is carried out by means of the plane aperture ratio of the reflector according to the also plane aperture ratio of impact of the ground aerial. In the case of general investigations as well as in the case of elliptic reflectors it is useful not to use plane but spherical aereas of impact and the radius of the sphere should be chosen equal to the distance between emitter and reflector. Thus a problem is obtained which is analogous to that of the theory of plane aerials. After this the field in the area occupied by the reflector is investigated and the applicability of the geometrical optic for the transformation of the field from the input aperture ratio of the reflector to its outlet aperture ratio is shown. By means of a double FOURIER transform ^{after} a general solution of the reverse problem for the periscope aerial system is given, i.e. calculation of the field distribution at the spherical aperture of the ground aerial in accordance with the directional diagram given. Then the authors investiga-

Card 1/2

POKRAS, A.M.

AUTHOR: Pokras, A. M.

108-11-2/10

TITLE: Computation of the Amplification of a Periscope-Antenna System (Raschet usileniya periskopicheskoy antennoy sistemy).

PERIODICAL: Radiotekhnika, 1957, Vol. 12, Nr 11, pp. 13-20 (USSR)

ABSTRACT: In this report the computation of the systems with an ellipsoidal antenna and a flat as well as a parabolic beam deflector is carried out for the cases of a "quadratic and a round aperture ratio" (raskryv). The physical picture of the work of the system with an ellipsoidal antenna is shortly explained. General formulae are the result according to which a computation of the amplification for real periscopic systems with a quadratic and a round aperture ratio are carried out. It is illustrated that under the same conditions but owing to the non-existence of the quadratic phase distortion the value of the utilization-coefficient is greater in a system with a parabolic beam deflector than with a flat beam deflector. In the system of "round aperture ratio" at the antenna and at the beam

Card 1/2

Computation of the Amplification of a Periscope-Antenna
System.

108-11-2/10

deflector only the so far non-examined case of a system with a parabolic beam deflector is treated in this place. On account of the diagrams and general formulae hereby obtained the amplification for most of the cases interesting for practical purposes can be computed. There are 5 figures, and 9 references, 7 of which are Slavic.

SUBMITTED: May 4, 1957.

AVAILABLE: Library of Congress

Card 2/2

AUTHOR: Pokras, A.M.

Sov/106-58-2-3/16

TITLE: The Choice of Relative Dimensions of the Apertures of Radiator and Reflector in a Periscopic System (Vybor sootnosheniya razmerov raskryvov izluchatelya i pereizluchatelya v periskopicheskoy sisteme)

PERIODICAL: Elektrosvyaz', 1958, nr 2, pp 20 - 24 (USSR).

ABSTRACT: In a periscopic system, a paraboloidal or ellipsoidal aerial mounted on the ground radiates vertically upwards. A reflector, flat or paraboloidal, inclined at a suitable angle, directs the beam to the next repeater station. The reflector, which is suspended from a tower, usually has a larger aperture than the radiator. Table shows data on four actual systems described in the literature, using paraboloidal radiator and plane reflector, the latter being the larger element. Table 2 refers to the use of an ellipsoidal radiator and a smaller reflector. Table 3 is for the radiator of Table 1 and the reflector of Table 2. The results show that the reduction in reflector dimensions which is so attractive from a wind-loading point of view, must be off-set by an increase in radiator dimensions. Table 4 is as Table 2 but uses paraboloids. The conclusion is that, roughly speaking, any reduction in

Card1/2

Sov/106-58-2-3/16

The Choice of Relative Dimensions of the Apertures of Radiator and Reflector in a Periscopic System

reflector area must be compensated for by an equal increase in radiator diameter; also an ellipsoid is better than a paraboloid when the radiator is the larger element. Tables 5 and 6 contain similar data on systems with parabolic reflectors and yield similar conclusions. A number of supplementary engineering considerations are also discussed such as the influence of the tower on the vertical beam, wind loading and structural stiffness. There are 1 figure, 6 tables and 9 references, 4 of which are Soviet and 5 English.

SUBMITTED: April 29, 1957

Card 2/2 1. Electronic equipment 2. Reflectors--Design 3. Radiators--Design

6(4), 7(7)

SOV/108-13-12-3/12

AUTHORS:

Gertsenshteyn, M. Ye., Pokras, A. K., Solovey, L. G.

TITLE:

Multi-Channel System of Parallel Selection Waveguides with
Variable Couplings (Mnogostvol'naya sistema parallel'noy
selektsii s reguliruyemyi svyazymi)

PERIODICAL:

Radiotekhnika, 1958, Vol 13, Nr 12, pp 20-25 (USSR)

ABSTRACT:

With relatively narrow bands or not too high claims with respect to the adaptation, the problem of dividing or joining the channels can be solved by means of a system of shunted series-resonance circuits. The various filters are connected, in parallel to each other, to the common conductor by a simple or compact tap. A simple method of setting up a tap for the shunted series-resonance circuits is given. This method is based on the calculation data without intricate experimental work. At first, the paralleling of the resonance circuits is investigated. The obtained formulae (3) and (5) show that the tap must be tuned jointly with the filter connected to it, with one element. The input resistance of filters with several elements is then investigated and it is shown that the mutual influence of the various channels is determined essentially by the input resona-

Card 1/2

SOV/108-13-12-3/12

Multi-Channel System of Parallel Selection Waveguides with
Variable Couplings

tors. Therefore, the input resonators of the filters with several elements must also be tuned with the taps. The connection of the filters to the common line is then investigated. The connection to the main waveguide is made variable by means of screws with a steplike cross section. By means of the method given in this article, a simple waveguide tap is worked out for a system with shunted series-resonance circuits with an input transient wave factor of ≈ 0.95 in the middle of the band. There are 7 figures, 1 table, and 3 Soviet references.

SUBMITTED: June 1, 1957

Card 2/2

SOV/106-59-3-6/12

AUTHOR: Pokras, A.M.

TITLE: The Choice of the Shape of the Apertures of Radiator and Re-radiator (Vybor formy raskryvov izluchatelya i pereizluchatelya)

PERIODICAL: Elektrosvyaz', 1959, Nr 3, pp 41-45 (USSR)

ABSTRACT: Up to the present time periscopic aerial systems have been considered in which the radiator and re-radiator shapes have been either circular (Ref 1, 2, 4, 5, 7) or square (Ref 1, 3, 7). It has never previously been justified that either of these shapes is the best; the present article remedies this defect. With the shapes previously considered the side radiation is considerable with consequent interaction between neighbouring systems. From the point of view of radiator efficiency a circular shape is best, since for a flat structure the minimum phase error is incurred at the edges of the mirror. From the point of view of side lobe level a circular re-radiator is also to be preferred, since with this shape the side lobe level is 17.6 dB, whereas with a square shape the corresponding figure is 13.2 dB when

Card 1/3

SOV/106-59-3-6/12

The Choice of the Shape of the Apertures of Radiator and Re-radiator

measured in a plane parallel to the side of square. The situation is not quite as simple: in fact the side lobes which are important are those which control the cross-talk between radiator and re-radiator on the same structure, that is the radiation at specific angles. In order to find the most appropriate shape we will consider the side lobe distribution for various shapes, as measured by Koch (Ref 6). The polar diagram is represented as a solid of revolution and the diagram of any particular direction is a cross-section of this solid. It will be seen from Fig 2, where the levels are plotted for the shapes drawn there, that the best performance is provided by an elongated shape of aperture. The explanation of this effect is that we have the equivalent of a tapered distribution of illumination with a consequent improvement in side lobe level. Fig 3 shows the possible tower arrangement using four rhombic structures. The re-radiator is turned so that one of its diagonals lies in the horizontal plane and the other in the vertical. With this arrangement the side lobe level at small angles of elevation is

Card 2/3

SOV/106-59-3-6/12

The Choice of the Shape of the Apertures of Radiator and Re-radiator

10dB less than with a circular aperture. It will be noted from Fig 3 that the two reflector arrangements are not quite symmetrical and this also helps to cut down the cross-talk. Using an even more elongated shape and tapering illumination improves the performance even more. One disadvantage should be pointed out however: because of asymmetry of the shape it has to be placed in a less advantageous position on the tower as far as wind loading is concerned. There are 3 figures and 7 references, 3 of which are Soviet, 2 English and 2 German.

SUBMITTED: 30th June 1958

Card 3/3

21328

9.1700 (2301, 2603, 2904)
6.4300

S/106/60/000/010/003/006
A055/A033

AUTHOR: Pokras, A. M.

TITLE: Protective action of a periscopic antenna system.

PERIODICAL: Elektrosvyaz', no. 10, 1960, 21 - 26

TEXT: In modern radio relay lines, the two-frequency communication system is generally used, one frequency serving (at intermediate points) for reception from both directions, and the other frequency for transmission in both directions. With this two-frequency system, the only way to prevent unwanted signals (coming from the opposite direction) from reaching the receiver input is to use antennae with a high protective action, i. e., antennae ensuring a very high ratio of the reception intensity from the main direction to the reception intensity from the opposite direction. For trunk lines, this protective action should not be below 60 to 70 db. In the present article, the author undertakes to calculate theoretically the protective action of a "periscopic" antenna, with the aim to estimate the possibility of using this antenna-type in the two-frequency communication system. Figure 1 shows schematically two adjacent periscopic antenna-sys-

Card 1/1

21328

S/106/60/000/010/003/006

Protective action of a periscopic antenna system A055/A033

tems at an intermediate station of a radio relay line, the re-radiators I and II being fixed on a common support. For the parasitic reception from the rear direction of the periscopic antenna system II, the following paths can be utilized: a) a signal from direction 1, picked up by the re-radiator of system I, is radiated in the direction of the radiator of system II. b) a signal from direction 1, picked up by the re-radiator of system II, is radiated in the direction of the radiator of system II. c) a signal from direction 1 excites the mast, whose radiation reaches the radiator of system II. d) a signal from direction 1 is reflected by local objects; it reaches re-radiator II, which reflects it towards radiator II (echo-signals). The author analyses particularly the case (a); in other words, he calculates the protective action of system II when the re-radiator of system I is excited by a plane wave arriving from direction 1. The protective action is determined by the formula:

$$\gamma = -20 \lg \frac{E_I}{E_{II}} \quad (1)$$

Card 2/6

21328

S/106/60/000/010/003/006

A055/A033

Protective action of a periscopic antenna system

where E_I is the emf at the output of radiator I and E_{II} the emf at the output of radiator II, the signal arriving from direction 1. The emf at the output of radiator II is given by the formula

$$E_{II} = A_1 \phi_1 \left(\frac{2\pi}{\lambda} a \sin \varphi_1 \right) A_2 \phi_2 \left(\frac{2\pi}{\lambda} b \sin \varphi_2 \right) \quad (2)$$

where ϕ_1 is the radiation pattern of re-radiator I excited by a plane wave coming from direction 1; ϕ_2 is the radiation pattern of the radiator; A_1 and A_2 are constant coefficients determined, respectively, by the size and shape of the re-radiator and of the radiator; φ_1 is the angle between the direction of maximum radiation of the re-radiator and the line connecting the centers of re-radiator I and radiator II; φ_2 is the angle between the direction of maximum pickup by radiator II and the line connecting the centers of re-radiator I and radiator II; $2a$ and $2b$ determine the apertures of the re-radiator and radiator, respectively. The emf at the output of radiator I is:

$$E_I = A_1 \phi_1 (0) A_2 \phi_2 (0) \quad (3)$$

Card 3/6

21328

S/106/60/000/010/003/006

A055/A033

Protective action of a periscopic antenna system

Substituting (2) and (3) into (1) and taking into account that $\phi_1(0) = \phi_2(0) = 1$, the author obtains the following expression for the protective action of the system:

$$\gamma = 20 \lg \phi_1 \left(\frac{2\pi}{\lambda} a \sin \varphi_1 \right) \phi_2 \left(\frac{2\pi}{\lambda} b \sin \varphi_2 \right) \quad (4)$$

He then reproduces several curves allowing to determine the protective action for different aperture-forms of the radiator and of the re-radiator, and for different laws governing the falling off of the field towards the edges of the aperture. A comparison of these curves shows that the protective action increases as the aperture form changes from the square to the rhomboidal. As regards cases (b), (c) and (d) the author draws the following conclusions of: b) - For the calculation of the protective action of system II, the signal reaching radiator II after reflection by re-radiator II can be neglected. c) - The excitation of the mast can strongly affect the protective action. But general effect cannot be calculated theoretically. It has to be estimated experimentally. d) - Echo-signals can also considerably affect the protective action. But these interferences depend,

Card 4/6

21328

S/106/60/000/010/003/006

Protective action of a periscopic antenna system A055/A033

above all, not upon the properties of the antennae, but upon the peculiarities of the path they are following. The author then compares his theoretical results with some experimental data supplied by V. D. Kuznetsov and A. V. Sokolov in their article "Protective action of periscopic antennae", *Elektrosvyaz'*, No. 1, 1957. The experimentally measured protective action proves to be 14 to 19 db below the calculated one. Since the appearance of echo-signals can be considered as impossible in said experiments, this difference is due to the excitation of the mast. In this conclusion, the author recommends to increase the size of the upper and lower mirrors (reflectors), to give a rhombiform or another elongated form to their apertures, and to increase the distance between the upper mirrors and between the lower ones. He also recommends a expedient mutual orientation of the mirrors, so as to reduce to a minimum the undesirable coupling. There are 6 figures, 3 tables and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The English language publication reads: Shin, Mis-focusing and the Near-field of Microwave Aerials, *Marconi Review*, v. XIX, No. 123, 1956.

SUBMITTED: October 10, 1959

Card 5/6

26201
S/106/60/000/002/002/009
A055/A133

9.1912

AUTHOR: Pokras, A. M.

TITLE: Intercoupling attenuation in a periscopic antenna system.

PERIODICAL: Elektrozvyaz',¹⁴ no. 2, 1960, 14 - 19

TEXT: For radio-relay antennas, an important parameter is the space decoupling or the attenuation of intercoupling. The present article is a theoretical estimate of the intercoupling attenuation that can possibly be attained by space selection (which is to be preferred to frequency selection) in the case of periscopic antennas. Intercoupling attenuation between two antennas (Figure 1) being determined by the energy radiated by one antenna and picked up by the other, the author calculates this energy for three different paths: 1) Energy from radiator I_b picked up by radiator II_b through re-radiator I_a . Intercoupling is determined by:

$$\tau_1 = \frac{P_{II}}{P_I} \quad (1)$$

Card 1/1

26201

S/106/60/000/002/002/009

A055/A133

Intercoupling attenuation in a periscopic antenna ...

where P_{II} is the power picked up by II_b , and P_I is the power radiated by I_b . To calculate P_{II} , the author assumes that the re-radiator pattern is determined as the pattern of a plane, uniformly excited cophasal aperture at distance d . He also assumes that the field distribution is uniform on the re-radiator and dropping by 10 db on the radiator. Under such conditions:

$$P_{II} = P_{III} \frac{G_{II}(\varphi_2) G_{III}(\varphi_0) \lambda^2}{16\pi^2 d^2} \quad (2)$$

where P_{III} is the power radiated by re-radiator I_a ; $G_{III}(\varphi_0)$ is the gain of I_a in the direction φ_0 ; $G_{II}(\varphi_2)$ is the gain of II_b in the direction φ_0 ; d is the distance between I_a and II_b ; λ is the wavelength. P_{III} is equal to the power radiated by I_b and intercepted by I_a . It is determined by the formula:

$$P_{III} = P_I \eta, \quad (3)$$

where η is the energy-transmission factor from radiator I_b to re-radiator I_b . [Abstracter's note: Obviously a misprint], determined by corresponding graphs. Substitution of (2) and (3) and (1) gives:

Card 2/6

Intercoupling attenuation in a periscopic antenna ...

26201
S/106/60/000/002/002/009
A055/A133

$$\tau_1 = \eta \frac{G_{II}(\varphi_2) G_{III}(\varphi_0) \lambda^2}{16\pi^2 d^2} \quad (4)$$

$G_{II}(\varphi_2)$ and $G_{III}(\varphi_0)$, expressed in terms of the radiator and re-radiator parameters, are

$$\left. \begin{aligned} G_{II}(\varphi_2) &= 4\pi \frac{S_{II}}{\lambda^2} C_{II} \Phi_3^2\left(\frac{2\pi}{\lambda} b \sin \varphi_2\right) \\ G_{III}(\varphi_0) &= 4\pi \frac{S_{III}}{\lambda^2} C_{III} \Phi_3^2\left(\frac{2\pi}{\lambda} a \sin \varphi_0\right) \end{aligned} \right\} \quad (5)$$

where S_{II} and S_{III} are geometrical areas of the radiator and re-radiator apertures; C_{II} and C_{III} are the aperture-area utilization factors;

$\Phi_3\left(\frac{2\pi}{\lambda} a \sin \varphi_0\right)$ is the pattern of I_a excited by I_b ; $\Phi_2\left(\frac{2\pi}{\lambda} b \sin \varphi_2\right)$ is the pattern of I_b ; $2a$ and $2b$ are the radiator and re-radiator linear dimensions. Substitution of (5) in (4) gives:

Card 3/6

26201
S/106/60/000/002/002/009
A055/A133

Intercoupling attenuation in a periscopic antenna ...

$$\tau_1 = \eta \frac{S_{II} S_{III}}{\lambda^2 d^2} c_{II} c_{III} \phi_3^2 \left(\frac{2\pi}{\lambda} b \sin \varphi_2 \right) \phi_3^2 \left(\frac{2\pi}{\lambda} a \sin \varphi_0 \right) \quad (6)$$

2) Energy from radiator I_b picked up by II_b through II_a . In an analogous manner, the author obtains:

$$\tau_2 = \eta \frac{S_{II} S_{III}}{\lambda^2 d^2} c_{II} c_{III} \phi_2^2 (\varphi_3) \phi_3^2 (\varphi_4), \quad (7)$$

angles φ_3 and φ_4 being indicated in Figure 1. A comparison of formulae (7) and (6) reveals that they are quite similar, with the exception of the angles. But $\varphi_2 = \varphi_3$, and, with a practically sufficient accuracy, φ_3 and φ_4 may also be considered equal. The amounts of energy picked up by II_a from I_b through I_a and II_a can thus be considered equal. 3) Energy from I_b picked up by II_b directly. Here also the calculation is the same, and:

$$\tau_3 = \frac{S_{II}^2 c_{II}^2}{\lambda^2 d^2} \phi_2^4 \left(\frac{2\pi}{\lambda} b \sin \varphi_5 \right) \quad (8)$$

Card 4/6

26201

S/106/60/000/002/002/009

Intercoupling attenuation in a periscopic antenna ... A055/A133

where D_1 is the distance between the lower reflectors. An analysis of (8) discloses that the amount of energy picked up by II_b direct from I_b is smaller than the amount of energy picked up through I_a and II_a . The author shows that, γ_5 being much greater than γ_2 , the direct coupling between radiators I and II can be neglected. In conclusion the author points out that intercoupling can prove, under practical conditions, considerably greater than its theoretically possible minimum magnitude, as determined by the described analytical method; a series of factors intervene, which do not lend themselves to an accurate theoretical analysis. There are 6 figures, 3 Soviet-bloc and 1 non-Soviet-bloc references. The reference to English-language publication reads as follows: Shin, "Mis-Focusing and the Near-Field of Microwave aeriels", Marconi Review, v. 19, No. 123, 1956.

SUBMITTED: September 16, 1959

[Abstracter's note: the following subscripts are translated in the text and formulae: b stand for δ ; l (lower) stands for μ .]

Card 5/6

28787
S/106/61/000/006/003/005
AC55/A127

9,1914 (1127)

AUTHORS: Pokras, A. M. and Kinber, B.E.

TITLE: Radiation pattern of a periscopic system with ellipsoidal radiator.

PERIODICAL: Elektrozv'yz', ¹⁵no. 6, 1961, 22 - 30

TEXT: The data already published on the radiation properties of a periscopic antenna system [Ref. 5: Antennaya sistema s otrazhayushchim zerkalom (Antenna system with reflecting mirror), Radiotekhnika, 1956, vol. 11, No. 3 and Ref. 6: G. Z. Aysenberg, Antenny ultrakorotkikh voln (Ultrashort-wave Antennae), Svyazizdat., 1957] are not complete and concern essentially the systems with a parabolic radiator. The present article presents a comprehensive analysis of the radiation pattern of a periscopic system with an ellipsoidal radiator. Neither the edge effects, nor the influence exerted by the support, by the reflection from local objects etc. are taken into account in the calculations. The main lobe of the radiation pattern: - According to an earlier article by B. E. Kinber and A. M. Pokras [Ref. 4: O postanovke zadachi v teorii pereskopicheskey anteny

Card 1/10

28787

3/106/61/000/006/003/005

A055/A127

Radiation pattern of a

(On the problem thesis of the theory of periscopic antennae), Radiotekhnika, 1957 vol. 12, No. 7] the radiation pattern $F(\varphi, \theta)$, for a system with a flat reradiator and with the field distribution in the output aperture plane determined by $F_0(x, y)$ is:

$$F(\varphi, \theta) = \int_{S_1} e^{iK(z_1 + y_1 v)} \frac{1}{2d} (z_1^2 + y_1^2) dz_1 dy_1 \times \int_{S_0} e^{i\frac{K}{d}(x_0 z_1 + y_0 y_1)} F_0(x_0 y_0) dx_0 dy_0 \quad (1)$$

where $u = \sin \varphi \cos \theta$, $v = \sin \theta$, $K = 2\pi/\lambda$ and d is the distance between radiator and reradiator. The coordinate system is shown in Figure 1. The indices 0 and 1 refer to the aperture of the radiator and reradiator respectively. S_0 and S_1 are the radiator and reradiator aperture areas. The most interesting systems are those with reradiators whose projection on the plane perpendicular to the pattern maximum is square, rhombic or circular, by the authors called systems with square, rhombic or circular apertures. For systems with square apertures, the field distribution in the output aperture can be approximately represented as the product of functions of x_1 and y_1 . The directional pattern is then:

Сери 2/11

28787

S/106/61/000/006/003/005
AC55/A127

Radiation pattern of a

(2)

$$F(n_1, n_2) = g(n_1)g(n_2)$$

where $n_1 = kau$; $n_2 = kav$; a is the dimension of the reradiator aperture. For systems with rhombic apertures, the expression for the pattern is:

(3)

$$F = g\left(\frac{\varphi + \theta}{\sqrt{2}}\right) g\left(\frac{\theta - \varphi}{\sqrt{2}}\right)$$

For systems with circular apertures, and with the field distribution symmetrical with respect to the axis, the pattern is:

(4)

$$F(\sqrt{\varphi^2 + \theta^2}) = \int_0^a f_{r_{\rho}}(r) J_0(kr \sqrt{\theta^2 + \varphi^2}) r dr.$$

Co-factors g for the main lobe of the pattern in systems with an ellipsoidal radiator and flat reradiator are determined by the following formula derived from

$$(1): g(n) = N \int_{-1}^{+1} e^{i n \frac{x_1}{a}} e^{-i \frac{\pi}{2} m \left(\frac{x_1}{a}\right)^2} d\left(\frac{x_1}{a}\right) \times \int_{-1}^{+1} e^{i \lambda_0 \frac{y}{a}} \frac{x_0}{b} [1 - k_0 \left(\frac{x_0}{b}\right)^2] d\left(\frac{x_0}{b}\right) \quad (5).$$

Card 3/11

28787

S/106/61/000/006/003/005

A055/A127

Radiation pattern of a

In case of a parabolic reradiator, formula (6) is used:

$$g(n) = N \int_{-1}^{+1} e^{in \frac{x_1}{a}} d\left(\frac{x_1}{a}\right) \int_{-1}^{+1} e^{i \frac{x_0}{b} \frac{x_2}{b}} \left[1 - k_0 \frac{x_0^2}{b}\right] d \frac{x_0}{b} \quad (6)$$

where $x_0 = kab/d$; $2a$ and $2b$ are the dimensions of the reradiator and radiator apertures; $m = 8a^2/\lambda d$. Calculations were made (with an electronic computer BESM) according to formulae (5) and (6) for the following cases: $k_0 = 0$, $k_0 = 0.58$ and $k_0 = 1$ (in all cases $n = 0 \div 10$, $\Delta n = 0.1$). The results of these calculations led the authors to the following conclusions: For small x_0 and for small quadrantal errors (small values of $m = 8a^2/\lambda d$), the shape of the pattern is the usual one and does not depend much on x_0 (whatever be the distribution-type in the radiator). As m increases, the main lobe widens and joins the first side lobes. For large values of x_0 and m , two factors intervene. On the one hand, when $x_0 \gg 1$, the pattern tends to approximate the shape of the distribution in the radiator aperture, inasmuch as the field distribution in the radiator aperture, and the pattern are connected by a double Fourier transformation. On the other hand, for large values of x_0 and with drooping distributions on the radiator, the field amplitude at the reradiator edges is small and the phase non-likeness has but little effect. The pattern approximates the shape of the distri-

Card 4/11

23787

S/106/61/000/006/003/005

A055/A127

Radiation pattern of a

bution on the radiator aperture, and a considerable difference can only occur for very large values of m . Long-distance side radiation. - In the determination of the long-distance side radiation, it is necessary to effect integration directly over the reradiator surface, and it is impossible to neglect the vector nature of the currents. The directional pattern F can be represented as

$$\vec{F} = F \vec{\Pi} \quad (7)$$

$\vec{\Pi}$ being the polarization factor. To apply formulae (1) to (6), it is sufficient to replace u and v by new arguments u_3 and v_3 , linearly related to them. The successive transformation of u and v are

$$\left. \begin{aligned} u_1 &= u; \quad v_1 = \sqrt{2}v \\ u_2 &= u; \quad v_2 = \sqrt{2} \left(v - \frac{\sqrt{2}}{2} \right) \\ u_3 &= u; \quad v_3 + \sqrt{2} \left[\frac{\sqrt{2}}{2} v + \frac{\sqrt{2}}{2} w - \frac{\sqrt{2}}{2} \right] = v + w - 1 \end{aligned} \right\} \quad (8)$$

Card 5/11

✓

29787
S/106/61/000/006/003/005
A055/A127

Radiation pattern of a

where $u = \cos \theta \sin \varphi$, $v = \sin \theta$, $w = \cos \theta \cos \varphi$. Substituting u_3 and v_3 in (1) to (6), the authors obtain formulas for the determination of the scalar co-factor in the case of long-distance side radiation. Important are usually, not the side lobes themselves, but their envelopes. a) Square apertures - The distribution in the aperture being:

$$f(x, y) = \cos\left(\frac{x_1}{a} \arccos T\right) \cos\left(\frac{y_1}{a} \arccos T\right) \quad (9)$$

the pattern will be the product of two co-factors:

$$\left. \begin{aligned} F(n_1; n_2) &= g(n_1) g(n_2) \\ n_1 &= ka u; n_2 = ka v \end{aligned} \right\} \quad (10)$$

$$g(n) = \frac{\sin(n + \alpha)}{n + \alpha} + \frac{\sin(n - \alpha)}{n - \alpha} \quad (11)$$

where $\alpha = \arccos T$. The following formula is obtained for the envelope of the lobes:

Card 6/11

✓

28787

S/106/61/000/006/003/005

A055/A127

Radiation pattern of a

$$\tilde{F}(\varphi, \theta) = \left(\frac{\alpha \cos \alpha}{\sin \alpha} \right)^2 \frac{1}{ka [\sin \theta + \cos \theta \cos \varphi - 1]} \frac{1}{ka \cos \theta \sin \varphi} \quad (14)$$

In the vertical plane, the formula is:

$$\tilde{F}(\theta, 0) \approx \frac{\alpha \cos \alpha}{\sin \alpha} \frac{1}{ka [\sin \theta + \cos \theta - 1]} \quad (15)$$

In the horizontal plane, the formula is:

$$\tilde{F}(0, \varphi) = \left(\frac{\alpha \cos \alpha}{\sin \alpha} \right)^2 \frac{1}{ka [\cos \varphi - 1]} \frac{1}{ka |\sin \varphi|}$$

b) Circular aperture. - If the distribution is $1 - k_1(r/a)^2$, giving a droop down to level $1 - k_1$ at the edge, the directional pattern can be expressed as:

$$F(n) = \frac{1}{\frac{\pi}{2} k_1} \left[(1 - k_1) \Lambda_1(n) + \frac{1}{2} k_1 \Lambda_2(n) \right] \quad (17)$$

where $n = ka \sqrt{u^2 + v^2}$, and $\Lambda_1 = \frac{2J_1(n)}{n}$ and $\Lambda_2 = \frac{8J_2(n)}{n^2}$ are lambda functions.
The formula for the envelope is:

Card 7/11

✕

28787
S/106/61/000/006/003/005
A055, A127

Radiation pattern of a

$$\tilde{F}(n) = 2\sqrt{\frac{2}{\pi}} \frac{1}{1-\frac{k_1}{2}} \frac{1}{|n|^{\frac{3}{2}}} \left[(1 - k_1)^2 + \left(\frac{2k_1}{n}\right)^2 \right]^{\frac{1}{2}} \quad (19)$$

c) Rhombic apertures. - The formula for the envelope of the side lobes is:

$$\tilde{F}(\varphi, \theta) \approx \left(\frac{\alpha \cos \alpha}{\sin \alpha} \right)^2 \frac{\sqrt{2}}{ka [\sin \varphi \cos \theta - \sin \theta - \cos \theta \cos \varphi + 1]} \times \frac{\sqrt{2}}{ka [\sin \varphi - \cos \theta + \sin \theta + \cos \theta \cos \varphi - 1]} \quad (22)$$

The polarization factor $\bar{\Pi}$ of the radiation pattern (17) has two components:

$$\left. \begin{aligned} \bar{\Pi} &= \bar{i}_\rho \Pi_\rho + \bar{i}_\theta \Pi_\theta \\ \Pi &= (j_0, j_\varphi) \\ \Pi &= (j_0, j_\theta) \end{aligned} \right\} \quad (25)$$

where:

$$\left. \begin{aligned} \bar{i}_\theta &= -\bar{i} \sin \theta \cos \varphi - j \sin \theta \sin \varphi + k \cos \theta \\ \bar{i}_\varphi &= -\bar{i} \sin \varphi + \bar{j} \cos \varphi \end{aligned} \right\} \quad (26)$$

Card 8/11

28787
S/106/61/000/006/003/005
A055/A127

Radiation pattern of a

For horizontal polarization, $\bar{j}_0 = \bar{i}$, and

$$\Pi_\theta = -\sin\theta \sin\varphi \quad (27)$$

$$\Pi_\varphi = -\cos\varphi$$

For vertical polarization $\bar{j}_0 = \bar{i} \frac{\sqrt{2}}{2} + \bar{k} \frac{\sqrt{2}}{2}$ and

$$\Pi_\theta = -\frac{\sqrt{2}}{2} \sin\theta \cos\varphi + \frac{\sqrt{2}}{2} \cos\theta \quad (28)$$

$$\Pi_\varphi = \frac{\sqrt{2}}{2} \sin\varphi$$

With vertical polarization, the pattern in the vertical plane contains only the θ -component. In the horizontal plane ($\theta = 0$), both θ and φ -components are present. In the direction of the maximum of the system pattern ($\varphi = 0$, $\theta = 0$), the φ -component equals 0. However, a cross-polarization component E, proportional to $\sin\varphi$, is noticeable even in the main lobe, on its slopes. The horizontal φ -component of E increases with φ . At $\varphi = 90^\circ$, the vertical and horizontal com-

Card 9/11

28787

S/106/61/000/006/003/005

A055/A127

Radiation pattern of a

ponents of the radiation become equal, which sets limits upon the magnitude of the decoupling and of the protective action in the case of an operation with perpendicular polarizations. According to experiments carried out by Kuznetsov and Sokolov (Elektrosvyaz', 1957, No. 1), the additional increase of the decoupling due to the use of two polarizations, is 10 - 20 db with periscopic antennae, as against 40 - 50 db with antennae of other types. With horizontal polarization, Π has an essential importance in the sectors of angles contiguous to $\varphi = \pm 90^\circ$, where it is near zero and reduces the long-distance radiation. Outside these sectors, Π has but little influence on the side lobes and envelope. There are 7 figures and 8 references: 7 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Jakes, Theoretical study of an Antenna-Reflector Problem. "Proc. IRE", 1953, vol. 41, No. 2.

SUBMITTED: January 5, 1960.

Card 10/11

PHASE I BOOK EXPLOITATION

SOV/6547

Pokras, Aleksandr Mikhaylovich

Periskopicheskiye anteny i besprovodnyye linii peredachi
(Periscope-Type Antennas and Wireless Transmission Lines)
Moscow, Svyaz'izdat, 1963. 197 p. Errata slip inserted.
9000 copies printed.

Resp. Ed.: A. I. Zin'kovskiy; Tech. Ed.: S. F. Romanova;
Ed.: E. M. Volkova.

PURPOSE: This book is intended for engineers and technicians specializing in shf antennas. It may also be of use to students in advanced courses in radio-engineering schools of higher education.

COVERAGE: The book deals with the wireless lines for electromagnetic super-high-frequency power transmission. General theory and the methods of designing wireless transmission lines are discussed. Two types of transmission lines, namely, the system of two active antennas and the periscope antenna system, are analyzed. Specific design features concerning mutual arrangement of corresponding short-range antennas are cited. The formulas and graphs permitting the

Card 1/8 2

Periscope-type Antennas (Cont.)

SOV/6547

calculation of energy distribution and selectivity of wireless transmission lines are derived. The book presents recommendations on the planning of wireless transmission lines and methods of measuring the parameters of these lines. The author thanks B. Ye. Kinber, G. Z. Ayzenberg, and A. M. Model'. There are 61 references: 27 Soviet and 34 non-Soviet.

TABLE OF CONTENTS:

Foreword	3
Introduction	4
Ch. I. Calculation of Wireless Transmission Lines and Deviation of Basic Relationships	
1. Stating the problem	8
2. Calculation of the field in the space covered by a reradiator or receiving antenna	11

Card 2/8

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9,1700
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S/108/61/016/002/003/011
B107/B212

AUTHOR: Pokras, A. M., Member of the Society of Radio Engineering and Electric Communication

TITLE: Various problems about increase of efficiency for wireless electromagnetic power transmission

PERIODICAL: Radiotekhnika, v. 16, no. 2, 1961, 15-20

TEXT: Transmission of transmitter power with wavelengths in the range of centimeter waves to an antenna by lines incorporates a number of disadvantages: Increase of noise level, ohmic losses, and danger by climatic conditions. The periscopic antenna system which has been developed in recent years is more favorable in this respect. Where this cannot be used it is appropriate to employ wireless power transmission. This paper deals with a theoretical study of the efficiency for wireless power transmission between a ground station and an antenna which is mounted on a high mast. Earlier investigations have treated systems with parabolic reflectors; here, it is suggested to use elliptic reflectors whereby the lower one is larger than the upper one. Best focusing is

Card 1/1

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obtained if both reflectors are segments of a spheroid with the exciter situated in one of the focal points. The output power of the upper antenna P_2 and the input power of the lower antenna P_1 are related as follows: $P_2 = \eta_1 \eta_2 \eta_3 \eta_4 P_1$; η_1 and η_2 are efficiency coefficients of

power transmission from the exciter to the lower and upper reflector. These coefficients are a function of the type of exciter and are in the order of 0.7 and 0.8. η_3 denotes the efficiency coefficient of the power

transmission between lower and upper reflector and is equal to the ratio of power which incides upon the upper reflector to the total power which is reflected from the lower reflector. η_3 is equal to the analogous coefficient for periscopic antennas and can be determined from corresponding curves (Fig. 4). η_4 is equal to the ratio of energy being received by the upper antenna to the total energy that incides upon it. The following

expression is derived for η_4

$$\eta_4 = \frac{\int_0^{X_0} \left[(1 - \kappa_1) A_1(x) + \frac{1}{2} A_2(x) \right] \left[1 - \kappa_2 \left(\frac{x}{X_0} \right)^2 \right] x dx}{\int_0^{X_0} \left[(1 - \kappa_1) A_1(x) + \frac{1}{2} A_2(x) \right]^2 x dx \int_0^{X_0} \left[1 - \kappa_2 \left(\frac{x}{X_0} \right)^2 \right]^2 x dx}$$

Card 2/5

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where $x = \frac{2\pi b}{\lambda} \sin \psi \approx \frac{2\pi b}{\lambda} \frac{q}{d}$; $X_0 = \frac{2\pi b}{\lambda} \sin \theta \approx \frac{2\pi b a}{\lambda d}$; $K = \frac{2\pi}{\lambda}$; λ - the

wave length, ψ - the angle between the running point of the upper reflector aperture and the normal between the center of curvature of the lower reflector and the side of the upper one; θ is the angle ψ for $q = a$; $\lambda_1(x)$ and $\lambda_2(x)$ are lambda functions; all other notations are explained

in Fig. 4. Fig. 5 shows the change of η_4 as a function of X_0 . The following example is given: Transmission of 3 cm waves between two reflectors having a diameter of 1.5 and 2.0 m over a distance of 60 m yields an efficiency of 20% if parabolic reflectors are used and 80% if ellipsoidal reflectors are used (η_1 and η_2 are assumed to be equal unity). Reflection losses of the upper reflector are small. [Abstracter's note: K , K_1 , K_2 are not defined]. There are 5 figures and 11 references: 7 Soviet-bloc and 4 non-Soviet-bloc.

SUBMITTED: April 5, 1960

Card 3/5

39472
S/106/62/000/008/009/009
A055/A101

9,1800

AUTHORS:

Andreyev, D., Pokras, A.

TITLE:

On the article of A.Z. Fradin "Square pyramidal horn with identical directivity patterns in the E and H planes"

PERIODICAL:

Elektrosvyaz', no. 8, 1962, 71

TEXT:

A.Z. Fradin (Elektrosvyaz', no. 9, 1961) obtained a horn-feed with square aperture and with identical directivity patterns in planes E and H by introducing longitudinal metal plates into the horn. The authors of the present article suggest another method. The walls of the horn (Fig. 1) are provided with "windows" between the cross sections A and B. With vertical polarization of the radiated signal, currents, analogous to currents in horn walls without "windows", will be sustained in the lateral walls between sections A and B; in the upper and lower walls, no current will be sustained, the "windows" being perpendicular to the electric field lines of force. This means that, with vertical polarization, the directivity pattern in plane H will be determined by the size of the aperture in section A, and in plane E by the size of the aperture in

Card 1/8 * S/106/61/000/009/006/008

On the article of A.Z. Fradin

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A055/A101

section B. An analogous result is obtained with horizontal polarization. The "windows" reduce the effective size of the horn in plane E and widen the directivity pattern in this plane. To obtain identical patterns in planes E and H, the ratio of the sizes of the horn aperture in sections B and A must be approximately 0.73. The sizes themselves can be determined with the aid of the usual formulae, e.g., of Fradin's formulae. The precise value of the ratio depends on the distance between sections A and B, and on the size of the "windows"; it must be chosen experimentally. Figure 2 shows the experimentally measured patterns of the feed (with dimensions expressed in wavelengths in Fig. 1). The natural matching of such a feed is not below 0.85. A higher matching (up to 0.95) is ensured by the introduction of narrow inductive strips into section B. A transverse shift of these strips with respect to the horn walls permits selecting the amplitude necessary for matching. There are 2 figures. X

Card 2/8 2

POKRAS, Aleksandr Mikhaylovich; Prinsipal uchastiye KINEER, B.Ye.;
ZIN'KOVSKIY, A.I., otv. red.; VOLKOVA, E.M., red.; ROMANOVA, S.F., tekhn.
red.

[Periscopic antennas and beam transmission lines] ~~Radiotekho-~~
picheskie anteny i besprovodnye linii peredachi. Moskva,
Sviaz'izdat, 1963. 197 p. (MIRA 16:8)

(Antennas (Electronics))

(Microwave communication systems)

L 00268-66 E/T(1)/T/FCS(k) WR

ACCESSION NR: AP5024724

UR/0108/65/020/008/0031/0038

621.396

AUTHOR: Pokras, A. M. (Active member of scientific technical society for radio-engineering and electrical communication); Sirenev, V. S⁴⁴ (Active member of scientific technical society for radioengineering and electrical communication)

TITLE: Compact antenna with a radiation pattern^{25B, 44} that is omnidirectional in the horizontal plane and compressed in the vertical plane

SOURCE: Radiotekhnika, v. 20, no. 8, 1965, 31-38

TOPIC TAGS: omnidirectional antenna, antenna engineering, antenna radiation pattern

ABSTRACT: A new compact antenna with an omnidirectional radiation pattern for use in air navigation or TV broadcasting is reported. The antenna operates in the centimeter band, and the pattern in the horizontal plane is circular, with a deviation of less than ± 2 db for a 12% frequency band. Half-power beamwidth in the vertical plane does not exceed 6° .

Card 1/8

L 00268-66

ACCESSION NR: AP5024724

The new omnidirectional antenna is claimed to surpass the achievements of Willoughby and Heider — the Australians who have developed a vertically polarized parabolic antenna — and those of an American team headed by S. R. Jones — developers of a uhf TV antenna now mounted on the Empire State Building. The Soviet antenna does not have the large vertical side lobes of the Australian model, and its circular horizontal pattern is more uniform than the ± 5.5 db specified for the American model. In addition, its physical size is smaller than either model.

The omnidirectional pattern with circularity of ± 2 db for a 12% frequency band is achieved by two dipole arrays symmetrically distributed on the opposite sides of the screen. The beamwidth of the radiation pattern in the vertical plane is controlled by the array length, while the required circularity is attained by the dipole shape and dimensions, the distance of the dipole from the screen, and the width of the screen.

Card 2/8

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ACCESSION NR: AP5024724

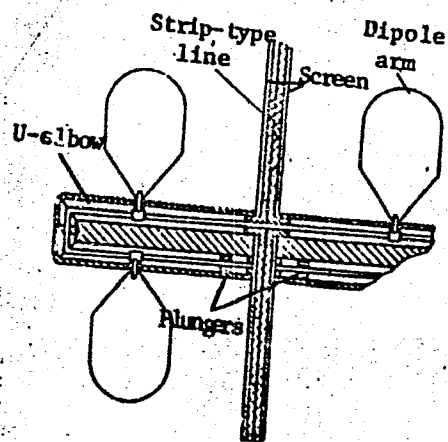


Fig. 1. Side view of antenna

As a starting point in the design, the initial element dimensions were derived for a model consisting of a pair of dipoles separated by a distance d , generating a partial radiation pattern with vertical polarization. Planar dipoles mounted perpendicularly to the screen were selected with dipole arms of $0.3-0.4\lambda$. The distance from the dipole axis to the screen was 0.25λ , and the screen width, 0.66λ . The geometrical distribution of the elements is shown in Fig. 1.

Card 3/8

L 00268-66

ACCESSION NR: AP5024724

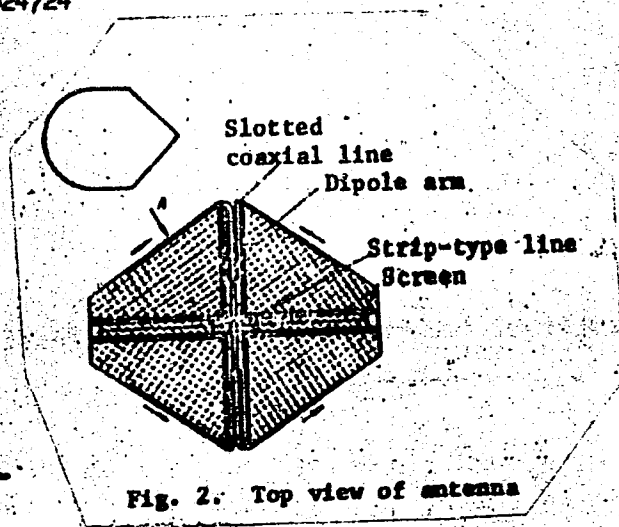
The 200—250- Ω input impedance of the dipole matched with the 50- Ω strip line from the supply system by a balanced feed method utilizing a U-elbow to ensure equal in-phase currents in the radiator elements and simultaneously to compensate for the reactive component of the input impedance. A traveling-wave ratio of 0.8 in the 12% frequency band is thereby attained.

In order to achieve a circular radiation pattern with horizontal polarization, a pair of dipoles was located on the opposite sides of a screen (Fig. 2) and fed out of phase. The angle between the dipole arms is of predetermined magnitude to facilitate formation of the loop current necessary for the establishment of a uniform omnidirectional pattern. The optimum distances between the dipoles and the screen, the dipole angle, and the screen width were established experimentally. The balancing scheme with the U-elbow could not be used for the horizontal polarization system since it reduces the circularity of the radiation pattern. Instead a balancing system in the form of a coaxial line with a slot in the outer sleeve was used. While this system assures compactness,

Card 4/8

L 00268-66

ACCESSION NR: AP5024724



Card
5/8

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ACCESSION NR: AP5024724

compactness, it introduces reactive components in the dipole input impedance, and an additional matching section is necessary to establish a traveling-wave ratio of 0.75 in the 12% frequency band.

The choice of the number of dipole elements is dictated by two contradictory considerations: 1) simplification of the feeder system, which points to a minimum number of elements, and 2) reduction of spurious radiation, which implies a maximum number of elements. With the chosen geometrical configuration and the requirement that the half-power beam-width be $\theta = 5^\circ - 7^\circ$, it was established that the number of elements needed was 4, 8, or 16. The best choice was found to be an eight-element array. Although the eight-element array forms considerable side lobes at $\theta = \pm 90^\circ$, they are easily attenuated to negligible levels by making the distance between the elements $D = \lambda_0$ (for vertical polarization) and $D = 0.9 \lambda_0$ (for horizontal polarization).

Card 6/8

L 00268-66

ACCESSION NR: AP5024724

For the feed system, a "Y" configuration was selected. It introduces constructional and manufacturing difficulties but assures an in-phase and balanced supply independent of frequency because the electrical path length to each element is equal. In this way the frequency band is limited only by the frequency range of the radiating elements. In order to avoid parasitic radiation, a balanced strip transmission line is utilized. The antenna input power is divided evenly between the radiating elements by the feed system, which includes a power divider, horizontal and vertical type coaxial-strip connectors, and impedance transformers. The antenna is protected from climatic changes by a solid cylindrical enclosure. The performance characteristics of the antenna are summarized in Table 1.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A. S. Popova (Scientific-technical Society for Radioengineering and Electro-Communication)

SUBMITTED: 17Oct63

ENCL: 01

SUB CODE: EC

NR REF SOV: 003

OTHER: 006

FSB v. 1, no. 10

Card 7/8

L 00268-66

ACCESSION NR: AP5024724

ENCLOSURE: 01

Table 1. Antenna performance characteristics

Antenna polarization	Gain, db			Max TWR in 12% band	Max circularity deviation, db			Half-power vertical beamwidth
	0.94 f_0	f_0	1.06 f_0		0.94 f_0	f_0	1.06 f_0	
Horizontal	10.3	10.5	7.8	0.65	± 1.7	± 1.35	± 1.8	6.0°—6.8°
Vertical	10.7	11.1	10.3	0.61	± 1.4	± 1.5	± 1.45	6.3°—7°

Card 8/8

POKRAS, Aleksandr Mikhaylovich; KORENBERG, Ye.B., otv. red.; ROBOVA,
M.N., red.

[Antenna systems of foreign telecommunication lines using
artificial satellites] Antennye ustroistva zarubezhnykh li-
nii svyazi cherez iskusstvennye sputniki Zemli. Moskva,
Sviaz', 1965. 167 p. (MIRA 18:8)

POKRAS, A.M.; SIRENEV, V.S.

Compact antenna with omnidirectional radiation pattern in the horizontal plane and compressed radiation pattern in the vertical plane. Radiotekhnika 20 no.8:31-38 Ag '65. (MIRA 18:8)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni A.S. Popova.

ACC NR: AT7003993 SOURCE CODE: UR/0000/66/000/000/0048/0055

AUTHOR: Perevodchikov, V. I.; Pokras, A. N.; Skibityanskiy, D. A.

ORG: none

TITLE: Electron gun with a current of 40—50 amp intended for pulsed linear accelerator

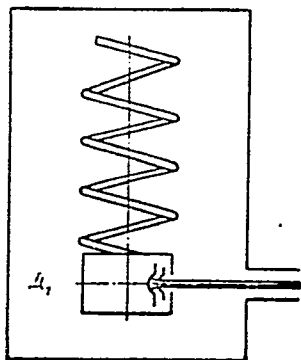
SOURCE: Mezhvuzovskaya konferentsiya po elektronnyim uskoritelyam. 5th, Tomsk, 1964. Elektronnyye uskoriteli (Electron accelerators); trudy konferentsii. Moscow, Atomizdat, 1966, 48-55

TOPIC TAGS: linear accelerator, electron gun

ABSTRACT: The design, construction, and testing of a special electron gun intended for operation in the linear accelerator of the Institute of Nuclear Physics, SO AN SSSR, are briefly reported. An accelerating voltage of 1.5 Mv is developed in a cavity resonator containing the gun chamber suspended from a helix (see figure). No structural insulating member between the first and second anodes is provided. Current density at a spherical cathode is 20 amp/cm². A focusing

Card 1/2

ACC NR: AT7003993



electrode is placed close to the cathode; the first anode is conical, and the second is a flat diaphragm. A sketch shows general construction of the axisymmetrical gun. The cathode is heated by the electron beam (180–360 w, 600 v). Turn-on pulse voltage is applied to the first anode whose breakdown voltage is about 45 kv. During the tests, the accelerating positive pulses were controlled within 0–22 kv. With a heater voltage within 5.5–7 v and a heater current, 25.5–27.5 amp, the cathode temperature was within 1550–1700C. With an electron-bombardment power of 360 w, the gun current was 42 amp. During the first two hours of gun operation, the emission current fell off by 25% and then remained constant for several dozen hrs. Orig. art. has: 7 figures and 1 table.

SUB CODE: 09 / SUBM DATE: 06Mar66 / ORIG REF: 001

Cord 2/2

POKRAS, D.

Moscow; a song. p. 10.
(LUDOVY ROZHLAS., Vol. 9, no. 18, Apr. 1953, Czechoslovakia)

SO: Monthly List of East European Accessions, Vol. 2 #8, Library of Congress,
August 1953, Uncl.

ANDON'YEV, S.M.; GLAZKOV, P.G. [deceased]; KUCHIN, V.A.; KONDRAT'YEV, Ye.M.;
LEVITASOV, Ya.M.; MAKAROV, K.I.; PANKRATOV, F.V.; PEVNYY, N.I.;
POKRAS, L.M.; POCHTMAN, A.M.; TESNER, P.A.; SHETNEYN, F.I.;
SHKLYAR, T.I.; Primali uchastiye: BERMAN, M.N.; VARFALOMEYEV,
F.L.; ROBIN, M.A.; MOYSIYEVICH, G.I.; SAPIRO, V.S.; ALEKSEYEV,
L.M.; POPOVA, R.S.

Heating Martin furnaces with natural gas using reformers.
Gaz. prom. 9 no.11:14-17 '64. (MIRA 17:12)

POKRAS, L. R.

"Rights of Enterprise Directors in the USSR" Stroitel'noye i Dorozhnoye
Mashinostroyeniye, No. 3, 1956.

Translation W-31939, 19 Oct 56

POMRAS, L.R.

Financing the cost of introducing new machinery. Stroil. 1 dor.
mashinostr. 1 no.2:30-32 P '56. (MIRA 10:1)
(Industrial management) (Machinery in industry)

POKRAS, L.T.

Directors of enterprises should make full use of their powers.
Stroi. i der.mashinostr. 1 no.3:28-30 Mr '56. (MIRA 10:1)
(Industrial management) (Machinery industry)

BRAZHNIKOVA, M.G.; KRUGLYAK, Ye.B.; BORISOVA, V.N.; POKRAS, L.S.

Isolation, purification and characteristics of the antibiotic
14725 from the ostreogrycin group. Antibiotiki 10 no.1:43-48
Ja '65. (MIRA 18:4)

1. Institut po izyskaniyu novykh antibiotikov AMN SSSR, Moskva.

L 22937-66 ENT(1)/T JK

ACC NR: AP6014829

SOURCE CODE: UR/0297/65/010/001/0043/0048

AUTHOR: Brazhnikova, M. G.; Kruglyak, Ye. B.; Borisova, V. N.; Pokras, L. S. 31ORG: Institute for the Search of New Antibiotics, AMN SSSR, Moscow (Institut po izyskaniyu novykh antibiotikov AMN SSSR) BTITLE: Isolation, purification, and characteristics of the antibiotic 14725 of the group of osterogrysins 6

SOURCE: Antibiotiki, v. 10, no. 1, 1965, 43-48

TOPIC TAGS: antibiotic, bacteria, chromatography/14725 antibiotic

ABSTRACT: The antibiotic 14725 was isolated from the cultural liquid of Actinomycete 14725 of the Actinomyces Kurssanovi species by extraction with ethyl acetate at a pH of 7.0 to 7.2; the extract was washed with water and concentrated in vacuum; the concentrated solution was treated with petroleum ether which precipitated the antibiotic; the latter was crystallized by a mixture of heated ethyl acetate with benzene (7:3). Chromatography was used for the investigation of the composition of the crystalline antibiotic. A system of chloroform-carbon tetrachloride applied on paper saturated with ethylene glycol indicated that the preparation is composed of three components. Two components are crystalline, soluble in chloroform, ethyl acetate, and ethanol, poorly soluble in benzene, and insoluble in carbon tetrachloride. The third component was not obtained in the form of a homogenous compound. A qualitative

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Card 1/2

UDC: 615.779.931-011/014

L 22937-66

ACC NR: AP6014829

analysis of the first two components established that the first component contains almost twice as much of N as the second component. With FeCl_3 the first component produces a red tint, while the second--a green tint. An investigation of the biological properties of both components revealed that the first component was active in relation to *Bacterium subtilis*, and the second--against *Staphylococcus aureus*; in addition both components were found to be synergetically active against *Staphylococcus aureus*. Data obtained in the investigations established also that antibiotic 14725 is close to a large number of antibiotics known as ostreogrynsins. Among them are streptogramin, staphylomycin, antibiotic PA-114, micamycin, and ostreogrysin. It was found also that the properties of first component of antibiotic 14725 do not differ from those of micamycin, and that the properties of the second component do not differ from those of micamycin A and staphylomycin M-1. Orig. art. has: 3 figures and 3 tables. [JPRS]

SUB CODE: 06 / SUBM DATE: 24Dec63 / ORIG REF: 002 / OTH REF: 013

Card 2/2 10